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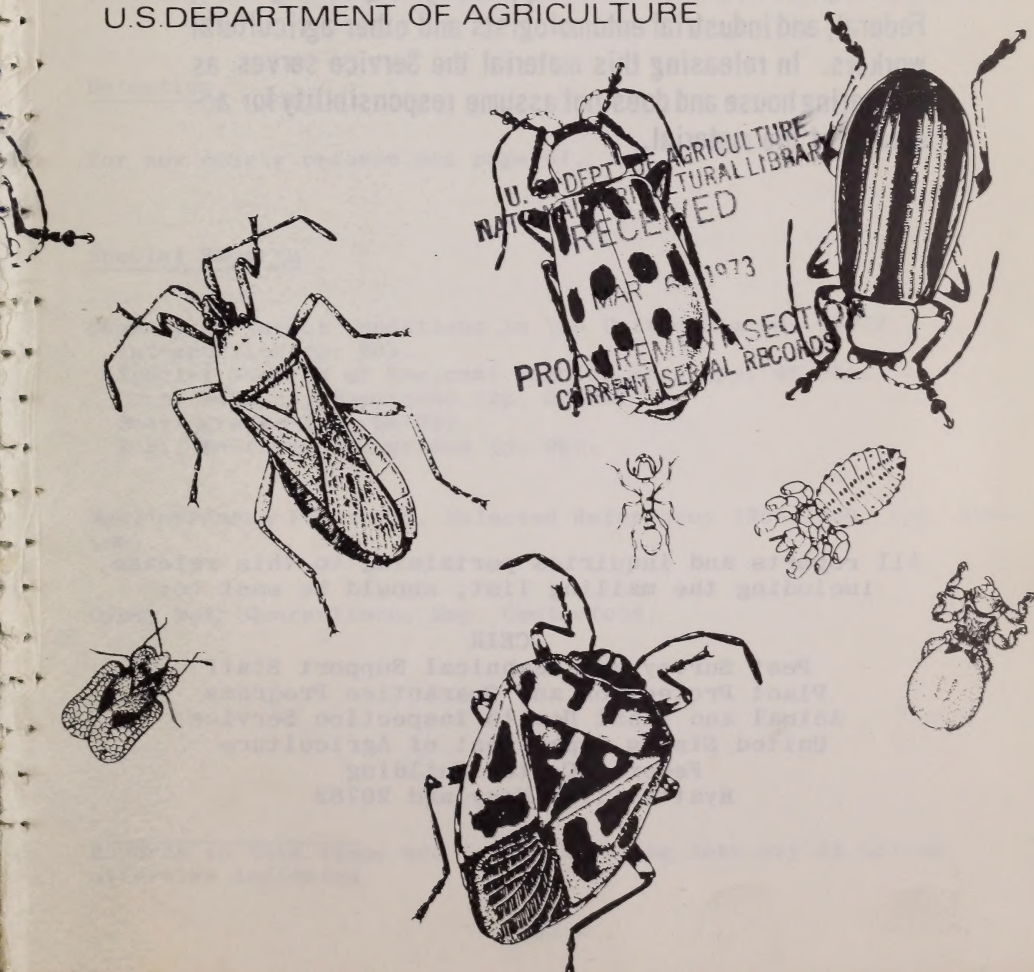
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Cooperative Economic Insect Report

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PLANT PROTECTION AND QUARANTINE PROGRAMS
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ANIMAL AND PLANT HEALTH INSPECTION SERVICE
PLANT PROTECTION AND QUARANTINE PROGRAMS
PEST SURVEY AND TECHNICAL SUPPORT STAFF

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Service serves as a clearinghouse and does not assume responsibility for accuracy of the material.

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COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

ALFALFA WEEVIL larvae heavy on alfalfa in central Texas, adults numerous in trash sampled in west-central Oklahoma. (p. 85).

SOUTHERN PINE BEETLE poses possible threat for outbreak in Alabama this year. (p. 86).

Detection

For new county records see page 87.

Special Reports

Summary of Insect Conditions in the United States - 1972

Introduction (p. 88).

Special Insects of Regional Significance (pp. 88-93).

Corn, Sorghum, Sugarcane (pp. 93-98).

Small Grains (pp. 98-99).

Turf, Pastures, Rangeland (p. 99).

Mediterranean Fruit Fly. Selected References 1956-1959. (pp. 100-106).

Gypsy Moth Quarantines. Map. Centerfold.

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SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

GREENBUG (*Schizaphis graminum*) - TEXAS - Populations generally light on small grain in Wilbarger, Foard, Childress, Jones, Haskell, Throckmorton, Archer, and Wichita Counties. Counts ranged 0-15 per row foot in most fields surveyed. Light to moderate in some fields in Motley and Knox Counties. (Boring).
OKLAHOMA - Ranged 2-3 per linear foot in wheat checked in Washita County. (Okla. Coop. Sur.).
ARKANSAS - Surveys continued negative in wheat in northwest areas. (Boyer).

SMALL GRAINS

WINTER GRAIN MITE (*Penthaleus major*) - TEXAS - Light on small grain in Archer, Foard, and Knox Counties. Increasing activity reported from some fields in Knox County. (Boring).

FORAGE LEGUMES

ALFALFA WEEVIL (*Hypera postica*) - TEXAS - Heavy on alfalfa in central areas. First and second-instar larvae prevalent in field samples. (Latham).
OKLAHOMA - Occasional larva noted in alfalfa in Pauls Valley area, Garvin County. Eggs light in Garfield County, no hatch noted. Adults very numerous in overwintering boll weevil trash samples checked in Washita County. (Okla. Coop. Sur.).
ARKANSAS - All surveys negative to date in State. This is in contrast with situation past 2 years when larvae became active in southwest area in late January. Differences due to much colder winter this year. (Boyer).

COTTON

BOLL WEEVIL (*Anthonomus grandis*) - OKLAHOMA - Averaged 9,600 weevils per acre in trash samples collected in Webbers Falls area of Muskogee County; ranged 4,000-4,800 per acre in Washita County, and up to 4,000 per acre in Kiowa County. (Okla. Coop. Sur.).

DECIDUOUS FRUITS AND NUTS

PEAR PSYLLA (*Psylla pyricola*) - OREGON - Treatment in Jackson County completed. Oviposition expected to begin in Hood River County pear orchards in 7-10 days. (Berry, Zwick).

ORNAMENTALS

NATIVE HOLLY LEAFMINER (*Phytomyza ilicicola*) - MARYLAND - Infestation levels moderate to heavy in ornamental plantings of American holly in Baltimore, Prince Georges, and Montgomery Counties. Larval development appears 3-4 weeks early due to mild winter. (U. Md., Ent. Dept.).

AN ARMORED SCALE (*Fiorinia externa*) - MARYLAND - Heavily infested hemlock near Catonsville, Baltimore County. Controls to be applied in spring. (U. Md., Ent. Dept.).

FOREST AND SHADE TREES

SOUTHERN PINE BEETLE (Dendroctonus frontalis) - ALABAMA - Small area of shortleaf pines, 6-12 inches in diameter, recently died due to extensive feeding of overwintering broods. Located in large pine area 10 miles northwest of Auburn, Lee County. Indicates overwintering broods may not have been reduced below levels that could produce population explosion in 1973. (McQueen).

AN OLETHREUTID MOTH (Rhyacionia bushnelli) - CALIFORNIA - Larvae and pupae present in twig tips of Monterey pine tree nursery stock in El Cajon, San Diego County. (Cal. Coop. Rpt.).

MAN AND ANIMALS

SCREWWORM (Cochliomyia hominivorax) - During the period February 4-10, there was one confirmed case reported in the continental U.S. from Hidalgo County, Texas. Total of 86 confirmed cases reported from Mexico. Number of sterile flies released in U.S. this period totaled 38,652,000, all in Texas. Total of 167,828,500 sterile flies released in Mexico. (Anim. Health).

COMMON CATTLE GRUB (Hypoderma lineatum) - OKLAHOMA - Moderate in Ottawa County with pupation beginning; light to heavy in Cotton County and light in Caddo County. (Okla. Coop. Sur.).

CATTLE LICE - OKLAHOMA - Lice, mainly Haematopinus eurysternus (shortnosed cattle louse), heavy on cattle in Cotton County, moderate in Ottawa County, and light in Caddo County. (Okla. Coop. Sur.). MISSISSIPPI - Infestations of Solenoptes capillatus and Linognathus vituli (longnosed cattle louse) reported January 19 controlled by use of insecticide dust. Examination of cattle revealed no lice present. (Robinson).

BROWN RECLUSE SPIDER (Loxosceles reclusa) - NORTH CAROLINA - Two specimens taken on separate occasions, June 13 and July 1, 1972, in residence near Apex, Wake County. This is a new county record. Previously taken only from Forsyth County. (Hunt).

STORED PRODUCTS

CONFUSED FLOUR BEETLE (Tribolium confusum) - NEW MEXICO - Light to moderate in miscellaneous stored feed at Roswell, Chaves County, and at Artesia, Eddy County. (N.M. Coop. Rpt.).

BENEFICIAL INSECTS

A LADY BEETLE (Coleomegilla maculata) - MISSISSIPPI - Large adult populations taken from trash along borders of soybean fields in Noxubee County. (Robinson).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

CARIBBEAN FRUIT FLY (Anastrepha suspensa) - FLORIDA - Larvae active in loquat fruit at Bradenton, Manatee County, February 6. (Fla. Coop. Sur.).

RED IMPORTED FIRE ANT (Solenopsis invicta) - NORTH CAROLINA - Thirty workers collected at Cape Fear River Bridge at Wilmington, New Hanover County, February 6 by F.I. Bowen. Determined by V.H. Owens. Confirmed by D.R. Smith. This is a new county record. (PPQ).

WOOLLY WHITEFLY (Aleurothrixus floccosus) - CALIFORNIA - One additional property found infested at Fallbrook, San Diego County. Treatment of infested properties and survey continued. (Cal. Coop. Rpt.).

HAWAII INSECT REPORT

Sorghum - CORN LEAF APHID (Rhopalosiphum maidis) generally light in 24 acres at Kahuku, Oahu; heavy in whorls and stems of some plants. From 30 to 85 percent of aphids parasitized by Lysiphlebus testaceipes (a braconid wasp). (Kawamura).

General Vegetables - PEPPER WEEVIL (Anthonomus eugenii) heavy in 5,000 square feet of sweet peppers at Pupukea, Oahu; about 85 percent of fruits infested. (Kawamura). Larval mines of LEAFMINER FLIES (Liriomyza spp.) light to moderate on greenhouse tomatoes at Pupukea, Oahu. Trace in 5,000 square feet each of mature and seedling snap beans in same area. (Kawamura).

Beneficial Insects - Field examination of Melastoma malabathricum at various locales on Hawaii Island revealed 34 and 24 percent infestation of fruits and terminals, respectively, by MELASTOMA BORER (Selca brunella). (Yoshioka). During January, Melanagromyza phaseoli (bean fly) infesting snap and long bean petioles collected at 9 locations on Kauai were 80-100 percent parasitized by BRACONID WASPS (Opius importatus and O. phaseoli). Similar samplings at Waikapu and Puunene, Maui, revealed 100 and 67 percent parasitism, respectively. (Sugawa, Miyahira).

DETECTION

New County Records - BROWN RECLUSE SPIDER (Loxosceles reclusa) NORTH CAROLINA - Wake (p. 86). RED IMPORTED FIRE ANT (Solenopsis invicta) NORTH CAROLINA - New Hanover (p. 86).

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1972

INTRODUCTION

The summary of insect conditions, beginning in this issue, will be continued in several succeeding issues of the Cooperative Economic Insect Report. This summary was compiled by the Pest Survey and Technical Support Staff from annual summaries submitted by various State and Federal cooperators. A list of the individuals who assisted in assembling data will appear after the last section of this summary is published. The Pest Survey and Technical Support Staff appreciates the assistance of all individuals who have participated in the preparation of material for the 1972 summary.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

Highlights:

ARMY CUTWORM is apparently an increasing problem on sugar beets in North Dakota, and damaged winter wheat in Montana. ARMYWORM was heavy on corn in North Carolina, and Virginia at midseason, and moth collections exceed all previous records for mid-July in Ohio. CORN EARWORM was a major pest of soybeans in Alabama and Arkansas. CORN LEAF APHID required treatment on corn and sorghum in some States. GREENBUG was of some concern on sorghum and small grains in the central Plains.

ARMY CUTWORM (*Euxoa auxiliaris*) caused no economic damage to crops in KANSAS in spring 1972 except in a few fields of small grains and seedling alfalfa in the northwest district. Treatment was made to an estimated 1,900 acres of about 5,600 acres of small grains and to about 2,100 acres of 4,100 acres of alfalfa which probably needed treatment. Some of this acreage also had coinciding infestations of PALE WESTERN CUTWORM (*Agrotis orthogonia*). Probably populations of both pests combined were necessary to justify treatment in some cases. Larval feeding by army cutworm was first observed in the north-eastern counties of COLORADO in early March. Economic infestations occurred in Washington County where counts up to 12 larvae per linear row foot were made. This pest also damaged alfalfa. Chemical controls were applied to wheat and alfalfa in this county. In NEBRASKA, stand reduction of alfalfa ranged from light to nearly complete loss, especially in first-year stands. Larvae ranged 0-4.5 per square foot in Hitchcock, Lincoln, and Dawson Counties by April 10. By April 17, most feeding was over and pupation had begun.

Army cutworm appears to be an increasing problem on sugar beets in NORTH DAKOTA where previously it was a problem only in winter wheat early in the season in some western counties. In the last few years, it has damaged early and late seeded beets in the Red River Valley. Many beet fields were reseeded 2-3 times in 1972. Controls have been ineffective. Army cutworm was first reported in MONTANA this season the second week of May, which is 2-3 weeks later than usual. Much winter wheat in Cascade and Chouteau Counties was treated in May to decrease losses, but about 6,000 acres required reseeding. Those acres reseeded without treatments were lost. An estimated 50,000+ acres worth \$1,250,000 were lost in Madison and Beaverhead Counties.

ARMYWORM (*Pseudaletia unipuncta*) was very heavy in corn across NORTH CAROLINA during June and July. Up to three control treatments were made to no-til fields in the Yadkin, Iredell, Wilkes, Surry, and Alleghany County area. In TENNESSEE, damage to small grains ranged light to severe in all sections of the State during May. Larvae were present in damaging numbers on corn in most areas of VIRGINIA by May 24 and severe in Roanoke, Buckingham, Amelia, and Craig Counties. Surveys in Montgomery, Pulaski, and Wythe Counties showed that an average of 35 percent of all plants were infested. Armyworm infestations in small grains were below 1971 levels in MARYLAND. Moderate to heavy infestations were found in Dorchester, Queen Annes, Talbot, and Wicomico Counties where about 3,500 acres of wheat and barley were treated. Damage to corn was also well below 1971 levels with heavy damage restricted to no-til corn in Frederick, Washington, Carroll, Montgomery, and Howard Counties where about 2,000 acres required controls. In PENNSYLVANIA, light to moderate armyworm infestations in no-til corn were reported in the south-central district by the first of June.

The first armyworm moths of the season in OHIO were collected during the second week in April. Populations increased steadily and moth collections exceeded all previous records for mid-July. Larval outbreaks in corn were reported from Guernsey, Muskingum, Ashland, and Monroe Counties and replanting was necessary in some Belmont, Darke, and Lawrence County fields. Armyworm was the most damaging pest of wheat, oats, and barley in KENTUCKY. Counts in Christian County ranged up to 340 per 100 sweeps on barley, with 30 percent of the heads cut. In Todd and Warren Counties larvae averaged 120 per 100 sweeps. Armyworm infestations on wheat reached moderately severe proportions in some areas in the southern third of ILLINOIS during late May and early June. In some thick, lush stands, populations ranged 3-15 (average 8) larvae per linear row foot.

Armyworm moths were first observed in east-central and southeast ARKANSAS in late March. A few infestations reached 5-6 larvae per square foot and were treated in late April. The highest recorded infestation was 18 per square foot in Desha County. Armyworm infestations were unusually light in KANSAS small grains during 1972, with no economic damage being reported. During early August, infestations in corn caused 50 percent defoliation in one treated field in Stafford County and 25 percent defoliation in a field in Stevens County. Light infestations were also reported in some fields in Grant and Seward Counties. Most defoliation was confined to the lower halves of plants. This pest was unusually heavy early in the season in CALIFORNIA, causing much damage to young corn and sorghum.

BEEF LEAFHOPPER (*Circulifer tenellus*) populations on sugar beets in western COLORADO generally remained low and noneconomic. This insect was found throughout the Arkansas Valley where adult counts ranged 0-25 per 100 sweeps in late July. In August, populations ranging from zero to 100 per 100 net sweeps were found on tomato plants in Otero County. Early April surveys showed that overwintering adult populations in desert breeding areas were low throughout the Snake River Plains of IDAHO. Desert host plant development was slowed by unusually cool weather and control programs were not needed.

CORN EARWORM (*Heliothis zea*) was generally light with few controls necessary in UTAH, NEBRASKA, IOWA, INDIANA, VIRGINIA, and SOUTH CAROLINA.

Corn earworm populations in MARYLAND were well below normal during June and July in all areas but by early August ear-tip damage ranged 5-20 percent in corn for grain and for processing along the Eastern Shore. Damage levels in central and western areas peaked from mid-August through September with damage ranging from 5 to 30 percent in some grain corn. Corn earworm was one of the major pests of soybeans in southern ALABAMA in 1972 with about 180,000 acres in the extreme southwest area receiving controls. An average of 4 applications were necessary on 160,000 acres in Baldwin County. Controls were required throughout the year in FLORIDA. In some instances during spring months, applications were made daily when corn silks were growing rapidly and population pressures were heaviest.

Corn earworm infested 75-80 percent of ears in cornfields throughout MISSISSIPPI. This noctuid is the most important pest of soybeans in ARKANSAS. Surveys in 1972 showed that 295,000 acres of soybeans, or 7.1 percent of the crop, were treated. Corn earworm remained light to moderate in OKLAHOMA alfalfa most of the season reaching a high of 15 per 10 sweeps in Payne and Noble Counties in late September. Moderate to heavy numbers damaged ears of both garden and field corn from mid-June to late August. Moderate to heavy numbers were reported in a few sorghum fields in the south-central counties during August. In NEW MEXICO, corn earworm larvae ranged 0-3 per ear tip, with controls necessary, in 7 eastern counties.

CORN LEAF APHID (*Rhopalosiphum maidis*) infestations ranged light to heavy on corn and sorghum in Burleson, Brazos, Washington, Colorado, and Lee County, TEXAS on May 5, but began to decrease rapidly during mid-May when heavy populations of lady beetles and other beneficial insects occurred. Fields in the High Plains area had infestations of zero to 2,000 aphids per plant in early June. Scattered counts of up to 600 corn leaf aphids per sorghum plant were found in most areas of OKLAHOMA from mid-May to early September. Heaviest counts of the season ranged 500-1,000 per plant in scattered fields in the Panhandle in late July and up to 2,000 per plant in scattered fields in Caddo County in early September. Corn leaf aphid was heavy in scattered fields of sorghum and corn over most of KANSAS during June, July, and early August. An estimated 28,000 acres of corn and 115,000 acres of sorghum were treated.

Corn leaf aphid colonies were present on barley in east-central NORTH DAKOTA, by mid-July and heavy populations damaged late-seeded barley in Cass County during August. Corn leaf aphid was light and never developed into a serious problem on corn in ILLINOIS. By mid-July, 90 percent of the plants in some fields were infested but colonies were generally small, with many infested whorls having only a single winged adult. By late summer, 26 percent of the population in some southern fields were parasitized by *Lysiphlebus testaceipes* (a braconid wasp). Corn leaf aphid infestations of corn grown for grain in INDIANA were 1.7 percent heavy (500+ per stalk), 6.8 percent moderate (51-500 per stalk), and 19.6 percent light during the tassel-in-whorl stage or slightly thereafter. The only severe infestations were found north of Indianapolis.

Corn leaf aphid populations on corn in MARYLAND remained light. Heaviest populations were encountered on the lower Eastern Shore where 700 acres required treatment the last week of July. Corn leaf aphid was heavy on corn throughout ALABAMA during the 1972 season, especially in the central and northern counties.

GREENBUG (Schizaphis graminum) infestations were local and damaged CALIFORNIA corn, sorghum, and small grains early in the season. Infestations in COLORADO ranged 0-200 aphids per plant in early July and increased to 1,000 per plant in late July, but by early September were practically nonexistent. Greenbug was generally light in most small grain areas of TEXAS. Heaviest damage was noted in Throckmorton County. Generally this aphid was light in the Rolling Plains and Panhandle areas during February. Infestations were heaviest, 200 per square foot, in Briscoe County. Infestations ranged 200-750 per plant in the South Plains as early as July 7 and by July 14 heavy infestations damaged grain sorghum in Glasscock County. Populations peaked in the South and High Plains August 4 and by August 11 numbers began to decrease in the Rolling Plains due to beneficial insect activity.

Greenbug necessitated the treatment of 2,000 acres of small grains in ARKANSAS where it became important for the first time. It was found in 14 new counties and is very likely statewide in distribution. Economic infestations occurred in Clay County and by mid-July, 1-5 leaves per plant had turned red and 500+ aphids per leaf were common. This was also the first year that greenbug became an important pest on sorghum in INDIANA. Most of the economic infestations in the State were found in Parke County. During March, 200-2,000 greenbugs per linear foot were found in scattered small grain fields in south and central OKLAHOMA. First infestations on sorghum were reported in Ottawa and Craig Counties the first week of June. Heavy numbers were present in scattered fields in most areas during July and August but heavy area-wide infestations did not develop. Greenbug caused more damage on sorghum in KANSAS than in any previous year. An estimated 1,110,000 acres were treated, an increase of 327,000 acres over 1968 the first year that greenbug became important on sorghum. Most of the heavy infestations were located in eastern and north-central areas. The first infestations on seedling sorghum were found in mid-May in Bourbon and Montgomery Counties. By early June, flights from mature wheat to sorghum were heavy throughout most of the eastern part of the State and by late June a general outbreak had occurred in east-central and northeast areas. During the third week of July, Lysiphlebus testaceipes (a braconid wasp) began to exert significant control in most eastern counties but much damage had already occurred. Except for localized infestations, economic damage on corn and wheat was generally low throughout Kansas.

The first damage in NEBRASKA occurred the week of June 2 when alates and nymphs ranged 1-10 per 1 to 3-inch seedling sorghum plant. Populations continued to increase and by June 8, light to moderate infestations occurred on 1 to 6-inch grain sorghum in the south-central district. Populations began to kill lower leaves of grain sorghum by June 30. Many fields developed severe yellow stippling on the whorl leaves. Populations peaked in the extreme southeast counties about July 10-15 with parasitism by L. testaceipes ranging 20-95 percent. Greenbug ranged up to 1,500 per lower leaf in Gage, Lancaster, Platte, and Seward Counties.

Scattered economic infestations were still reported from Custer and Dundy Counties on August 4. Heavy damage with up to 2,000 greenbugs per linear foot were noted in Box Butte and Morrill Counties October 20. Greenbug damaged wheat and barley locally in Ransom County, NORTH DAKOTA. Populations of 3,000 per 100 sweeps were present in late seeded crops on July 28. Greenbug damaged forage and grain sorghum in 15 IOWA counties from July 10 to August 5. Populations peaked on 12-inch forage sorghum at 360 per plant on July 21 in Story and Polk Counties. At this time parasitism by L. testaceipes ranged 7-39 percent in Polk County.

ASTER LEAFHOPPER (Macrosteles fascifrons) migrants were first detected in rye in southwest WISCONSIN about April 20. A 50-fold increase in numbers occurred by May 5, when counts up to 150 per 100 sweeps were recorded at Spring Green, Sauk County. Movement from rye to oats began the first week of May. About 6.27 percent were infected with aster yellows disease which prompted a warning that there was a high potential for transmission to vegetable crops. By mid-July, this leafhopper decreased greatly and the percent infected with aster yellows had decreased to 1 percent. Leafhopper control efforts by vegetable growers kept aster yellows damage in check.

POTATO LEAFHOPPER (Empoasca fabae) caused light to moderate damage on alfalfa in Frederick, Baltimore, Washington, Carroll, and Montgomery Counties, MARYLAND. This pest was first reported in alfalfa, 5-10 per sweep, the last week in June. Populations peaked during July when counts ranged 5-50 per sweep, then fell below economic levels the second week of August in Carroll, Frederick, and Washington Counties. Infestations outside these counties remained noneconomic with counts ranging 5-10 per sweep. Damage on commercial lima and snap beans remained below economic levels mainly due to scheduled spray programs maintained by growers.

SPOTTED ALFALFA APHID (Therioaphis maculata) was light in alfalfa fields of Otero and Prowers Counties, COLORADO, in mid-June. Populations reached 10-30 aphids per sweep by early July and remained at that level until mid-September. Counts ranged light to moderate in most areas of OKLAHOMA. The only heavy infestations were reported in Cotton County in late March and in few east-central counties in late July and early August. In MISSOURI, counts ranged from 0-105 aphids per 10 sweeps in the southwest and south-central areas during August. Populations peaked at 1,000+ per 10 sweeps during early September in the southwestern area and yellowing and stunting were observed in areas of low rainfall. Spotted alfalfa aphid was taken as early as the last week in March in Daviess County, INDIANA. Populations up to 100 per sweep were found in one field in St. Joseph County in mid-July but this aphid was rarely of economic importance in the State.

TOBACCO BUDWORM (Heliothis virescens) was the major insect pest of flue-cured tobacco early in the season in several north FLORIDA counties. Infestations appeared about 16 days earlier than in 1971, and losses were moderate to heavy. This species and H. zea (corn earworm) occurred in mixed infestations as the most serious tobacco pests on ALABAMA'S 520 acres. Extremely active control efforts by growers kept them under good control. H. virescens and Manduca sexta (tobacco hornworm) were the major problem in most tobacco producing counties of SOUTH CAROLINA.

TOBACCO HORNWORM (Manduca sexta) did not infest wrapper tobacco in FLORIDA, but in the flue-cured tobacco area it was the major mid - and late-season insect pest of the State.

CORN, SORGHUM, SUGARCANE

Highlights:

EUROPEAN CORN BORER was generally higher than usual in several States. SOUTHERN CORNSTALK BORER infested corn in Kansas for first time since 1920. BLACK CUTWORM was of some concern on corn in southern Iowa and southern Illinois. CORN ROOTWORMS were economic on corn in several areas. SORGHUM MIDGE was an important pest of sorghum in Kansas, Missouri, Texas, and Mississippi.

EUROPEAN CORN BORER (Ostrinia nubilalis) infestations were significant in occasional cornfields in Linn and Johnson Counties, KANSAS, in late September. One field in Linn County had 95 percent of the plants infested. This pest was collected in Wichita and Logan Counties for the first time. Overwintered European corn borer populations were very heavy in central and southern NEBRASKA. In Hall County, overwintered borers averaged 5,025 per acre, or 3.35 times the average for 13 years of survey data. First moths of the season were taken May 17 in blacklight trap at Aurora. By May 25, about 60 percent of larvae in corn residue had pupated, and pupation was about 100 percent in east, southeast and central districts by June 2. First-brood moth flights peaked about June 8, then declined sharply. First-generation borer populations were generally light, except in occasional early planted corn in the east and central districts. Infestations ranged 0-80 (average 25) percent in late June and July. Second-brood moths were first trapped about mid-July and peaked about August 10-17. Second-generation borer populations were 83 percent lighter than those of 1971, and caused generally light damage.

The fall abundance survey in NORTH DAKOTA showed an increase from 130 borers per 100 plants in 1971 to 140 borers per 100 plants in 1972. Second-brood larvae were relatively unimportant this season. Stalk breakage due to this pest was heavier than normal in 1972. Cold weather moved into MINNESOTA during the critical time of European corn borer moth emergence and egg laying in June reducing activity to the point that the first and second generations were only minor problems. A few warm periods did induce sporadic egg laying in August and September, but populations were moderate to heavy in only isolated cornfields. Survival of overwintering O. nubilalis larvae in WISCONSIN ranged 80-100 percent in April despite a cold, open winter. Pupation began about May 20 and adults were caught in blacklight traps from May 26 to July 3, with peak catches about June 14. First eggs were noted June 14 and larval feeding was apparent June 20. First-generation larvae infested about 5 percent of grain corn and up to 30 percent of sweet corn plants in mid-July. Pupation began about July 21 and second-flight moths were taken in blacklight traps from July 24 to October 1. Egg mass counts reached 1 per 10 plants by August 15 at some sites and control treatments were initiated. Very heavy larval infestations were observed in late sweet cornfields in Columbia County, where some fields had up to 68 percent of ears infested. The annual fall survey showed an average population of 29 borers per 100 plants. This compares to 57 per 100 plants in 1971 and the 30-year average of 45 per 100 plants.

Overwintering European corn borer larvae averaged 6,074 per acre across IOWA in early May compared to 6,375 in 1971. The first moth was collected May 28 in Polk County. Oviposition began in early June and peaked about June 19. Extended cool, wet weather during the oviposition period reduced the economic potential of the first generation. Fields in central Iowa averaged 0.4 first-generation borers per plant and 1.4 second-generation borers per plant. Fewer than 200,000 acres were treated for European corn borer control in Iowa in 1972. First European corn borer moths of the season were collected in MISSOURI May 16 in Boone County. From 10 to 50 percent of corn plants in most areas showed feeding injury. The first generation appeared to be less injurious than during the past 5 years. The State average of infested plants was 61.05 compared to 70.16 in 1971. In ILLINOIS the overwintering survival European corn borer was 74 percent compared to a normal 80-85 percent. First and second generations averaged 1 and 32 borers per 100 plants, respectively, compared to a 10-year average of 4 and 101 borers per 100 plants. Pupation was completed by late May with 65 percent moth emergence. Egg laying began the first of June in the southern half of the State. By the first week of July, 70 percent of the borers were in the fifth stage. About 70,000 acres of corn were treated in Illinois, mainly for first-generation control.

The first European corn borer moth of the season in OHIO was trapped May 25 and peak emergence occurred June 11-20. Egg masses could be found statewide by June 9. Inspections during the last 2 weeks in July showed percent damaged plants by counties as follows: Pike 40, Morgan 36, Highland 24, and Clinton 20. Second-generation moths first emerged on August 1 and peaked August 21-30.

First adults of the season in DELAWARE were collected in black-light traps May 7, with peak flights the first week of June. Second-flight adults peaked at 25-30 per night during late July and the first week of August. This flight was much below the 1971 peak of 150 per night. The third adult flight peaked during late August, with an average of 22 per night which was also far under the 1971 average of 135 per night. These light adult flights correlate with the fall abundance survey which shows a State average of 186 borers per 100 plants compared to 358 in 1971. European corn borer severely damaged seedling corn in scattered fields over the Coastal Plain of NORTH CAROLINA during June. Larval damage was noticeable across the State during late August.

SOUTHWESTERN CORN BORER (*Diatraea grandiosella*) was heavy in several cornfields in ARIZONA from mid-August through November. Larvae were so plentiful in some plants that growth was inhibited to the point of producing almost totally blank seed heads. Early spring surveys in MISSOURI showed that heavier than normal numbers of southwestern corn borer successfully overwintered. On July 8, 22 percent of the plants were infested with fourth and fifth instar larvae. By July 22, 50 percent of second-generation adults had emerged, 40 percent were pupae, and 10 percent were full-grown larvae. The fall abundance survey showed the percent infested plants was down from 33.7 in 1971 to 25.05 in 1972.

SOUTHERN CORNSTALK BORER (*Diatraea crambidoides*) infested corn for the first time in KANSAS since 1920. Infestations involving 25-50 percent of stalks were verified in 2 fields in Pottawatomie County during 1917. At a later date, an 8-percent infestation was found in a field.

THE FOLLOWING REGULATED ARTICLES
CERTIFICATE OR PERMIT YEAR-ROUND

1. Trees, shrubs with persistent woody stems, and cones.

Trees and shrubs, and parts thereof, are exempt the year and so labeled on the outside of each

Cuttings, and scions with stems no greater than

Parts of trees and shrubs that have been dried, similarly surface-treated, are exempt.*

Christmas trees are exempt.*

Boughs and Christmas greenery are exempt.*

2. Timber and timber products, including but not cordwood, and pulpwood.

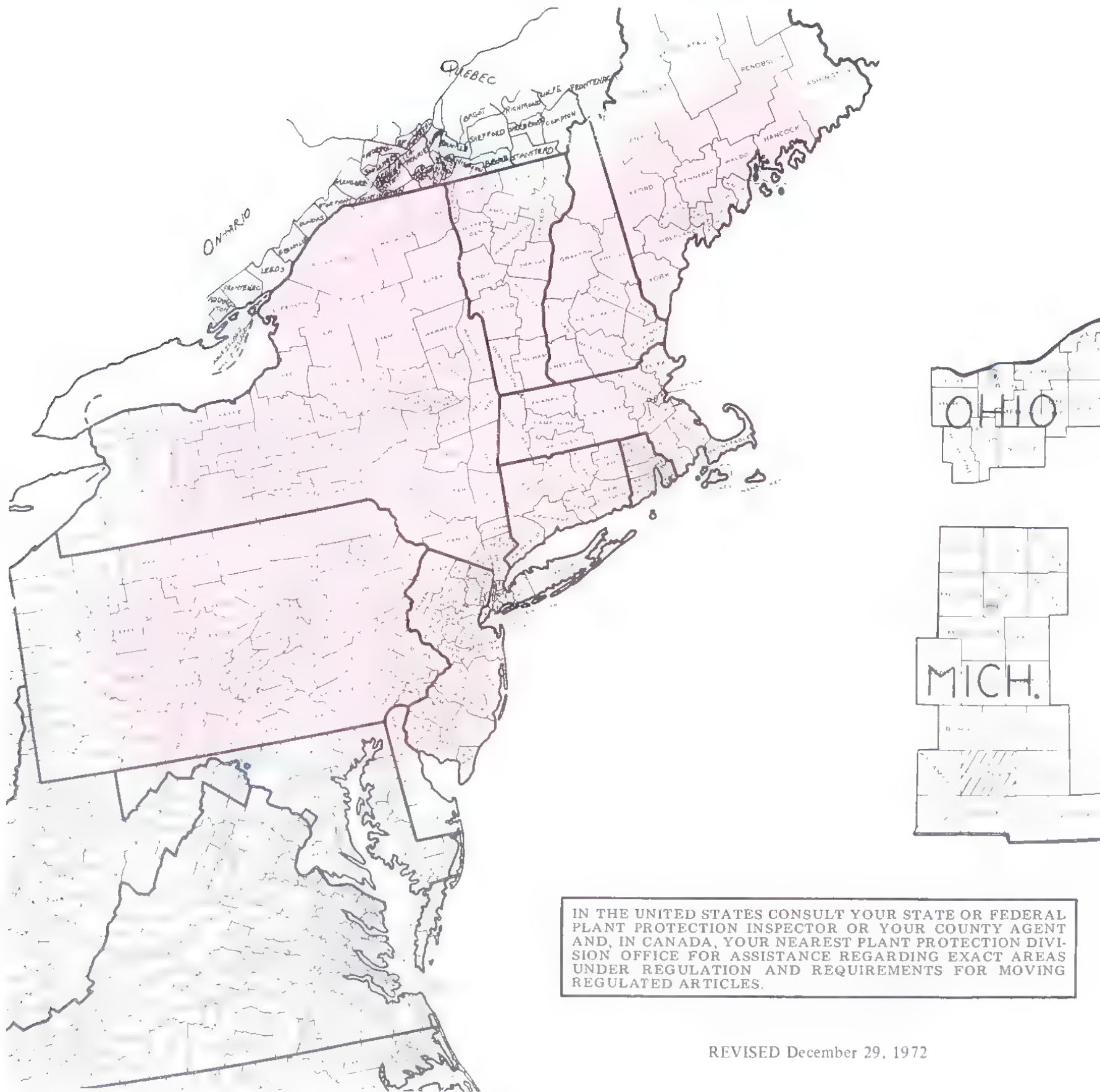
Lumber is exempt if dressed or sawed four sides bark, or if kiln dried, provided such lumber is waybill or other shipping document is marked, immediately after processing.*

D. virgifera began emergence July 14 some emergence was reported through severe root damage was noted during late July in untreated corn in Omaha and Sedgwick Counties. During September, much goosenecking indicating severe root damage, was noted in many fields in the southeast area. About 91,000 acres of corn were treated for adult corn rootworms in Kansas. Western corn rootworm and NORTHERN CORN ROOTWORM (*D. longicornis*) larval activity was first observed in Nebraska June 15 in Saunders County. First *D. virgifera* adults were observed in this county July 7. Scattered corn rootworm damage occurred throughout the State, but was most common in eastern



GYPSY MOTH QUARANTINES

U S DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
PLANT PROTECTION AND QUARANTINE PROGRAMS
AND CANADA DEPARTMENT OF AGRICULTURE
COOPERATING WITH AFFECTED STATES



COUNTIES ENTIRELY COLORED ARE COMPLETELY REGULATED;
COUNTIES PARTIALLY COLORED ARE PARTIALLY REGULATED

GENERALLY INFESTED AREA—STATE, FEDERAL, AND CANADIAN REGULATIONS
(Eradication Treatments Not in Progress or Planned)

SUPPRESSIVE AREA—STATE, FEDERAL, AND CANADIAN REGULATIONS
(Suppressive Treatments in Progress or Planned)

STATE REGULATIONS ONLY
(Suppressive Treatments Planned Where Necessary)

ERADICATED—REGULATION REMOVED

See Reverse Side For List of Regulated Articles

RESTRICTIONS ARE IMPOSED ON MOVEMENT OF
REGULATED ARTICLES FROM A REGULATED
AREA AS FOLLOWS

1. FROM RED INTO OR THROUGH GREEN OR WHITE.
2. FROM GREEN INTO OR THROUGH WHITE
3. GREEN INTO GREEN.
4. WITHIN GREEN *
5. FROM BLUE INTO ANY OTHER AREA.**

*IF REQUIRED BY AN AUTHORIZED INSPECTOR.
**IF REQUIRED BY APPROPRIATE STATE
QUARANTINE OR BY AN AUTHORIZED
INSPECTOR.

Overwintering European corn borer larvae averaged across IOWA in early May compared to 6,375 in was collected May 28 in Polk County. Oviposition June and peaked about June 19. Extended cool, the oviposition period reduced the economic production. Fields in central Iowa averaged 0 borers per plant and 1.4 second generation than in Iowa were percent first past comparison European percent 100 plant borers percent southern of the were t

The first trapped could 2 weeks follow general 30.

First light Second and the peak of August, the 1961 correla average European fields Larval

SOUTHWEST several

Larvae to the spring of southern percent of southern larvae. Manufactured wood products, such as shingles, exempt.

emerged, 40 percent were pupae, and 10 percent were full-grown larvae. The fall abundance survey showed the percent infested plants was down from 33.7 in 1971 to 25.05 in 1972.

SOUTHERN CORNSTALK BORER (*Diatraea crambidoides*) infested corn for the first time in KANSAS since 1920. Infestations involving 25-50 percent of stalks were verified in 2 fields in Pottawatomie County during late August. At a later date, an 8-percent infestation was found in one Chase County cornfield.

FALL ARMYWORM (*Spodoptera frugiperda*) was abundant in buds and on ears of sweet corn in FLORIDA, particularly in the Everglades area. On October 18, fall armyworm and beet armyworm destroyed 97 percent of the buds on unsprayed young sweet corn at Bradenton, Manatee County. Fall armyworm larvae were heavy (2-3 per plant) in ears and stalks of sweet corn during the fall. Fall armyworm caused light to moderate damage to corn for processing and for grain throughout MARYLAND. First larvae of the season were collected July 25 in Carroll County. Most infestations remained below economic thresholds with about 300-700 acres requiring controls during late August.

BLACK CUTWORM (*Agrotis ipsilon*) infestations were reported from most cornfields in the southern half of IOWA. Some fields showed 50 percent damage and replanting was necessary. Control was applied on approximately 50,000 acres. Many cornfields in the southern half of ILLINOIS were severely damaged by black cutworm during late May and early June. An estimated 79,000 acres were replanted and about 124,000 acres received emergency control treatments.

BEET ARMYWORM (*Spodoptera exigua*) has become a major insect pest of sweet corn in FLORIDA because of difficulty in control. It was particularly destructive to buds during late spring and early fall in the Everglades area. Beet armyworm was a pest of corn and sorghum all year in CALIFORNIA with some fields severely damaged. This damage was more general and heavier than in past years.

CORN ROOTWORMS (*Diabrotica* spp.) were of concern in several States. **WESTERN CORN ROOTWORM** (*D. virgifera*) was reported for the first time in IDAHO when a medium to heavy infestation was found in 6 acres of corn at Dayton, Franklin County, July 27, 1972. (See 'EIR 22(35):574) By September 1, adults average 7 per 40-50 plants and ears in 7 fields. Root damage was insignificant and no plant lodging was observed. *D. virgifera* larvae were heavy in Baca County, COLORADO. Many growers having no previous rootworm problems failed to treat and losses were heavy in some fields. Larval infestations were heavier than usual in Weld County and there were many complaints by growers who failed to apply adequate controls. Eggs had hatched and larvae were active by mid-June. Adult emergence was noted by mid-July. Losses were heavy in some corn in northeast Colorado where adult controls were not applied.

D. virgifera began emerging in northeast KANSAS July 6 and by July 14 some emergence was reported throughout the State. Some severe root damage was noted during late July in untreated corn in Nemaha and Sedgwick Counties. During September, much goosenecking indicating severe root damage, was noted in many fields in the southeast area. About 91,000 acres of corn were treated for adult corn rootworms in Kansas. Western corn rootworm and **NORTHERN CORN ROOTWORM** (*D. longicornis*) larval activity was first observed in NEBRASKA June 15 in Saunders County. First *D. virgifera* adults were observed in this county July 7. Scattered corn rootworm damage occurred throughout the State, but was most common in eastern

THE FOLLOWING REGULATED ARTICLES MUST BE MOVED UNDER
CERTIFICATE OR PERMIT YEAR-ROUND **EXCEPT** AS INDICATED

- 1 Trees, shrubs with persistent woody stems, and parts thereof, **except** seeds, fruits, and cones.

Trees and shrubs, and parts thereof, are exempt if grown in a greenhouse throughout the year and so labeled on the outside of each container.*

Cuttings, and scions with stems no greater than one-half inch in diameter are exempt.*

Parts of trees and shrubs that have been dried, pressed, waxed, lacquered, varnished, or similarly surface-treated, are exempt.*

Christmas trees are exempt.*

Boughs and Christmas greenery are exempt.*

- 2 Timber and timber products, including but not limited to lumber, planks, poles, logs, cordwood, and pulpwood.

Lumber is exempt if dressed or sawed four sides with ends clipped and free of surface bark, or if kiln dried, provided such lumber is shipped direct after processing and the waybill or other shipping document is marked to show that the lumber was shipped immediately after processing.*

Manufactured wood products, such as shingles, flooring, furniture, handles, etc., are exempt.*

Shavings, sawdust, wood flour, excelsior, and cedar bedding are exempt.*

- 3 Stone and quarry products.

Stone and quarry products are exempt if processed by grinding or pulverizing.*

- 4 Mobile homes, recreational vehicles, and associated equipment moving from hazardous parks or recreational sites.

*Exempt if not exposed to infestation after the prescribed handling.

counties. Adults ranged 1-3 per corn plant in most fields in August. Percent lodged plants averaged 7.4 in northeast, 7 in eastern, 3.5 in southeast, zero in central, and zero in southern districts during October. D. virgifera infestations and damage appeared to be lighter in NORTH DAKOTA than in 1971. Adults averaged 26 per 100 plants in infested fields in Richland County, with 10 percent of fields showing lodging due to larval feeding.

D. longicornis and D. virgifera egg hatch and larvae were first noted in MINNESOTA the week of June 26. First adults of the season were seen in mid-July. In early August, surveys in 54 counties showed that populations declined in 1972 in all except the southwest district. Corn rootworms were still important economic pests of corn during 1972 and will continue to be so in 1973. An adult corn rootworm survey in WISCONSIN during late August showed a 60-percent decrease from 1971 populations. Western corn rootworm decreased more than did northern corn rootworm. D. virgifera comprised more than 50 percent of the corn rootworm population in the southwest and northwest districts. Lodged plants became evident about July 12 following rain storms. Some southwest area fields had 28 percent lodging, but state-wide damage averaged about 5 percent. In MICHIGAN, threatening populations of D. virgifera were found in Allegan, Berrien, Cass, Calhoun, and Ingham Counties.

Second and third instar Diabrotica spp. larvae were first observed in IOWA in Clayton County about June 15. During the second week of July untreated fields in Clayton and Webster Counties averaged 20 and 23 larvae per corn plant, respectively. Economic populations were observed statewide. Lodged stalks declined from 4.97 percent in 1971 to 1.58 percent in 1972 statewide. About 4,000,000 acres of corn were treated for rootworm control in Iowa during 1972. Hatching of D. virgifera eggs was observed in western MISSOURI during early June. Heavy larval infestations were reported from isolated spots throughout the western area. Adult emergence was noted during the first week in July. Counts on corn ranged from less than 1 beetle per plant to 20+ per plant. Adults were collected for the first time in 9 Missouri counties.

Newly hatched western corn rootworm and northern corn rootworm larvae were first found in northern ILLINOIS in early June and by mid-July adults of either species could be found throughout the State. An adult survey in early August indicated 1972 populations of both species had increased over those of 1971 in 8 of the 9 crop districts in the State. Infestations were heaviest in the northwestern third of the State where populations average 100 adults per 100 plants. About 36,000 acres of corn were treated for adult control and 3,680,000 acres were soil treated for larval control in Illinois. Western corn rootworm spread to 13 new counties in INDIANA in 1972. D. virgifera adults were found in 36.3 percent of cornfields in the northwest district and in 38.9 percent of fields in the north-central district. In those districts of Indiana in which both species compete, D. longicornis was 1.7 times more numerous than D. virgifera in the northwest district and 28 times more numerous in the north-central district. The heaviest population, 10,500 per acre, was found in Porter County. No observed corn rootworm populations in Indiana warranted controls in 1972.

MAIZE BILLBUG (Sphenophorus maidis) and S. callosus caused 40 percent stand loss of corn in scattered fields in NORTH CAROLINA as far north as Tyrrell County by June 1. Up to 5+ larvae per stalk were observed in Washington, Hyde, and Tyrrell Counties. More than 60 percent of the cornfields in Washington, Hyde, Tyrrell, Beaufort, Craven, and Pamlico Counties, North Carolina, evidenced marginal row damage by these pests. S. maidis and S. callosus continued to damage corn in most coastal counties of SOUTH CAROLINA. Heavy populations destroyed 40 acres of corn in Orangeburg County in May and 5 acres of mature corn in Dillon County in August. Chemical controls against S. callosus remained ineffective in South Carolina.

CHINCH BUG (Blissus leucopterus leucopterus) caused some economic damage on corn in northwestern OHIO. Up to 50 chinch bugs per ear were reported in Wood County July 19 and heavy populations damaged corn in Putnam County during the first 2 weeks of August. Chinch bug was troublesome in seedling corn and sorghum in scattered fields in the eastern half of KANSAS. Serious infestations occurred in Washington and Jackson County sorghum where some treating was necessary in late June. Moderate to heavy numbers damaged sorghum in Kiowa, Comanche, and Tillman Counties, OKLAHOMA, during June and early July. Localized but heavy infestations of chinch bug (12-15 per plant) were noted on corn in Limestone County, TEXAS, March 24. By mid-April, heavy populations were noted on corn in Lee County and on grain sorghum in McLennan and Limestone Counties.

CONCHUELA (Chlorochora ligata) was heavy on grain sorghum throughout much of central TEXAS as well as the Rolling and South Plains. First reports of economic damage were received June 30 from Gillespie and Travis Counties where infestations averaged 2 per head in many fields. During August and September damage was noted in several South Texas and Rolling Plains counties.

SORGHUM MIDGE (Contarinia sorghicola) caused heavy yield losses in some late planted sorghum in KANSAS, primarily in southeastern counties. Losses of 25-50 percent were not uncommon in very late sorghum in this area. The last significant infestations encountered in Kansas grain sorghum occurred in 1967 in the same area but only involved two counties--Montgomery and Wilson. This insect was again the most important insect on sorghum in southeastern MISSOURI. Heaviest populations (20-40 adults per head) were found on midseason and late sorghum in the extreme southeast area. The heaviest sorghum midge infestations in TEXAS were noted on late grain sorghum in the central and Rolling Plains areas during July. Counts ranged up to 80 midges per sorghum head in some central and north-central counties. Sorghum midge was also the most damaging insect of sorghum in MISSISSIPPI. Peak emergence of overwintering populations occurred in mid-May. Grain planted in mid-July in Oktibbeha County had 98 percent of the heads destroyed in mid-October, 60 percent of the grain grown for ensilage in Noxubee County was destroyed.

BANKS GRASS MITE (Oligonychus pratensis) populations on silage corn began increasing in July in Churchill County, NEVADA, and by early August heavy infestations had developed in many fields and chemical treatments were required. Banks grass mite was noted on corn in the Arkansas Valley of COLORADO about mid-June. Cooler

than normal weather kept populations under economic levels until late July. Economic infestations developed in Pueblo, Crowley, Otero, and Bent Counties in early August. Controls became necessary throughout August in the Arkansas Valley. Scattered infestations of this mite on corn were reported from the north-central and northeastern areas of Colorado. Infestations were present on corn and sorghum in the Panhandle counties of OKLAHOMA from late July into early September but heavy infestations were found only in limited areas. Heavy damage to sorghum was reported from Caddo County for the first time.

SMALL GRAINS

Highlights:

FALL ARMYWORM damaged small grains in Alabama and Oklahoma. HESSIAN FLY caused much less damage to wheat in Kansas this season than in 1971. BROWN WHEAT MITE required controls on 100,000 acres of oats in Texas in late October.

FALL ARMYWORM (*Spodoptera frugiperda*) damaged several thousand acres of oats, barley, rye, and wheat in various areas of ALABAMA. Larvae of this noctuid were a problem in some newly planted small grains, mainly rye, in western ARKANSAS in September. Fall armyworm damaged early planted small grains in almost all areas of OKLAHOMA from mid-September through mid-October. Late planted fields sustained little or no damage. Larvae caused some damage to seedling wheat in KANSAS, primarily in the southeast counties during the fall.

Larvae of a GELECHIID MOTH (*Leucogonia californica*) caused severe damage to germinating wheat on widespread acreages in Yolo County, CALIFORNIA. This is the first reported commercial damage in the State by this pest.

HESSIAN FLY (*Mayetiola destructor*) occurred in a 700-acre area of McMinn County, TENNESSEE, where 1-99 percent of grain stalks were infested. Infestation of wheat in 385 acres of mixed wheat and vetch for silage resulted in a 125-ton yield reduction over 1971. Hessian fly populations in wheat stubble in late July were light in ILLINOIS, averaging 4 puparia per 100 tillers throughout the surveyed area in the southern half of the State. A survey of winter wheat in Wayne County in late October showed an average of 239 larvae and puparia per 100 tillers in susceptible varieties and 50 larvae and pupae per 100 tillers in resistant varieties. Scattered light infestations of Hessian fly occurred on spring wheat in NORTH DAKOTA this season, but no economic infestations or damage were found or reported. Hessian fly caused an estimated loss of 570,240 bushels of wheat in KANSAS compared to a loss of 3,031,030 bushels in 1971.

ENGLISH GRAIN APHID (*Macrosiphum avenae*) infestations were heavier than normal in ARKANSAS. Populations built up to 100-150 per 100 sweeps by early February and 500-600 per 100 sweeps by early March. A few fields in east-central Arkansas were treated in late March for combined infestations of this species and *Schizaphis graminum* (greenbug). Winged and wingless adults of English grain aphid were observed the third week in May in NORTH DAKOTA. Infestations were prevalent in most eastern and southeastern counties by mid-July, and were widespread but noneconomic over most of the State by the end of July. No damage occurred.

APPLE GRAIN APHID (Rhopalosiphum maidis) was moderate to heavy in wheat in Finney, Wichita, and Greeley Counties, KANSAS, in early November and in Lane County in early December. In OKLAHOMA, Rhopalosiphum padi infested small grains in most areas from mid-January to early April. Counts of 2,000-3,000 per linear foot were reported on rye in Stephens County in late March.

BROWN WHEAT MITE (Petrobia latens) was heavy, 500-2,000 per row foot, on wheat in Donley, Hall, and Childress Counties, TEXAS, by April 14. During late October, heavy damage was noted in Falls County and control measures were applied to approximately 100,000 acres of oats. Brown wheat mite was a problem on wheat only in isolated areas in Curry, Roosevelt, and Quay Counties, NEW MEXICO, in 1972. Infestations were heavy on winter wheat in southeastern COLORADO early in April. Some damage occurred in extremely dry regions and some growers applied controls. Brown wheat mite damaged 6,000 acres of wheat in the Monticello area of San Juan County and some fields in Washington County, UTAH. Infestations elsewhere in the State were light to moderate. Populations in NEVADA began increasing on small grains in late March and by mid-April were heavy in many fields in Pershing County. Irrigation controlled these infestations except for 700 acres which were treated chemically.

Spring migration of BARLEY THRIPS (Limothrips denticornis) in NORTH DAKOTA began in mid-May before most barley had emerged. In early seeded barley, infestations averaged 14 thrips per leaf sheath in mid-July, but most barley escaped losses because of the lateness of the crop.

TURF, PASTURES, RANGELAND

FALL ARMYWORM (Spodoptera frugiperda) populations in SOUTH CAROLINA were less damaging than the previous 2 years. Where damaging infestations did develop, they occurred primarily on Coastal Bermuda grass and on late-planted sweet corn. Heavy infestations in Bermuda grass and ryegrass lawns and pastures were reported from a number of counties in the eastern half of OKLAHOMA during late September and October.

SAGEBRUSH DEFOLIATOR (Aroga websteri) severely damaged several thousand acres of big sagebrush (Artemisia tridentata) in Churchill, Lander, and Washoe Counties, NEVADA.

GRASSHOPPERS infested turf and pastures statewide in ALABAMA. The most important species were Melanoplus femurrubrum, M. differentialis, and Schistocerca americana. Damage was most serious on 2 to 6-leaf clover seedlings in pastures during fall months, and on reseeded clover and grass sods where grasshoppers, in combination with crickets, destroyed many seedlings and weakened stands.

FALSE CHINCH BUG (Nysius ericae) populations were heavy on about 100,000 acres of rangeland at White Oaks, Lincoln County, NEW MEXICO.

MEDITERRANEAN FRUIT FLY
Ceratitidis capitata (Wiedemann)

Selected References
1956-1959

Copies of this bibliography are available from Pest Survey and Technical Support Staff.

- Aubin, M. 1956. La mouche des fruits dans la région parisienne en 1955. Acad. d'Agr. de France Compt. Rend. 42(11):553-556.
- Ayers, E. L. 1957. The two Medfly eradication programs in Florida. Citrus Indus. 38(12):7-8.
- Bass, J. 1956. Über die Mittelmeerfruchtfliege Ceratitidis capitata Wied. Gesunde Pflanzen 8(1):5-9.
- Bassols de Barrera, I. and del Valle, G. 1956. Datos sobre la biología y el combate de la mosca del Mediterraneo Ceratitidis capitata Wiedemann, 1824. Fitofilo 9(13):9-21.
- Benas, G. and Targe, A. 1956. La mouche des fruits en 1955. Phytoma 8(74):16-20.
- Benlloch, M. 1957/1958. La inspeccion de la naranja y otras frutas con respecto a la mosca Mediterranea (Ceratitidis capitata Wied.). Spain. Estac. de Fitopatol. Agr. Bol. Pat. Veg. Ent. Agr. 23:1-14.
- Beran, F. 1956. Die Mittelmerrfruchtfliege, eine neue gefahr für unseren obstbau! Pflanzenarzt 9(1):1.
- Berg, G. H. 1958. Campaign against the Mediterranean fruit fly in Costa Rica. FAO Plant Protect. Bul. 6(4):53-56.
- Berg, G. H. 1958. La mosca del Mediterráneo y sus ataques al cafe. Cafe de El Salvador 28(318/319):281-282.
- Berg, G. H. 1959. Discovery of Mediterranean fruit fly. FAO Plant Protect. Bul. 7(7):101-102.
- Bohm, H. 1956. Wie steht es um die Mittelmeerfruchtfliegengefahr? Pflanzenarzt 9(12):109-110.
- Bohm, H. 1958. Zum vorkommen der Mittelmeerfruchtfliege, Ceratitidis capitata Wied., in Wiener Obstbauggebiet. Pflanzenschutzberichte 21(9/10):129-158. Engl. Sum.
- Brogdon, J. E. 1956. The Mediterranean fruit fly and its importance in relation to mangos. Fla. Mango Forum Proc. 16:23-26.
- Carmichael, W. W. 1956. Importation of Mediterranean fruit fly due to lax quarantine regulations. Citrus Mag. 18(11):10-11, 16.

- Chancogne, M. and Viel, G. 1957. Comparaison de l'action de différentes substances insecticides sur Ceratitis capitata Wied. Internatl. Cong. Crop Protect. Proc. 4(2):1297-1301.
- Costantino, G. 1956. Artificial control of the larvae and pupae of the Mediterranean fruit fly (Ceratitis capitata, Wied.) in the soil by means of synthetic organic products and particularly heptachlor-based products. Internatl. Cong. Ent. Proc. 3(10):31-40. In Ital. Pub. 1958.
- Del Rivero, J. M. 1956. Nuevo procedimiento para combatir las moscas de la fruta y del olivo. Siembra pp. 6-11.
- Denmark, H. A. 1956. The Mediterranean fruit fly infests Florida again: second report. Fla. Ent. 39(4):175-176.
- De Pietri-Tonelli, P. 1959. Ceratitis capitata, a solution to the control problem. Instituto di Ricerche Agrarie, Soc. Montecatini, Milano, Contributi 3:89-91. In Ital., Engl. Sum.
- De Pietri-Tonelli, P. 1959. Control of fruit fly. Instituto di Ricerche Agrarie, Soc. Montecatini, Milano, Contributi 3:129-131. In Ital., Engl. Sum.
- De Pietri-Tonelli, Barontini, A., and Santi, R. 1959. Experiments in control of Ceratitis capitata Wied. Instituto di Ricerche Agrarie, Soc. Montecatini, Milano, Contributi 3:53-88. In Ital., Engl. Sum.
- Desmoras, J. 1959. Activites insecticides de composés organophosphores sur les larves de Ceratitis capitata W. application au dosage biologique de l'endothermion. Phytiatricie-Phytopharm. 8(2):73-83.
- Dumas, P. 1956. Vers l'application de mesures preventives contre la mouche Mediterranéenne des fruits. Phytoma 8(83):12-14.
- European and Mediterranean Plant Protection Organization. 1957. Ceratitis capitata Wied. Report of the Second International Conference on Mediterranean Fruit Fly. European and Med. Plant Protect. Organ. 67 pp. (Paris). Text in Engl. and Fr.
- Ezzat, M. A. 1958. A short note on the chemical control of the Mediterranean fruit fly Ceratitis capitata (Wied.) Diptera: Trypetidae. Agr. Res. Rev. 36(1):119.
- Féron, M. 1957. Le comportement de ponte de Ceratitis capitata Wied.: influence de la lumière. Rev. de Path. Vég. et d'Ent. Agr. De France 36(3):127-143.
- Féron, M. 1958. Mise en évidence d'un stimulus significatif dans le comportement de ponte de Ceratitis capitata Wied. (Dipt. Trypetidae). Acad. des Sci. Compt. Rend. 246(10):1590-1592.
- Féron, M., Delanoue, P., and Soria, F. 1958. L'élevage massif artificiel de Ceratitis capitata Wied. Entomophage 3(1):45-53. Engl. Sum.

- Féron, M. and Guennelon, G. 1958. La mouche des fruits dans la vallée du Rhone. Journées Fruitières et Maraichères d'Avignon. pp. 39-44.
- Frezal, P. 1957. Action comparee du DDT et des formules insecticides et attractives sur la mouche des fruits (Ceratitis capitata Wied). Phytiatricie-Phytopharm. 6(1):43-48.
- Gamero De La Torre, O. 1958. Trabajos de control de las moscas de la fruta Ceratitis capitata Wied y Anastrepha striata Schin. (Trypetidae). Rev. Peruana de Ent. Agr. 1(1):60-66.
- Georgala, M. B. 1958. Fruit fly control. Citrus Grower 292:1-2.
- Georghiou, G. P. 1956. Contribution to the control of the Mediterranean fruit fly (Ceratitis capitata, Wied.) on oranges with dieldrin and poisoned bait sprays. Cong. Internatl. de l'Agrumicult. Mediter. Livre 4:315-339. Pub. 1958.
- Georghiou, G. P. 1956. Control of Medfly on citrus. Cyprus Dept. Agr. Educational Leaf. 3/56. 8 pp. Sup.
- Gireau, G. and Ferand, G. 1958. L'utilisation du dibromethane dans la lutte contre la mouche des fruits. Phytoma 10(101): 7-10.
- Giunchi, P. 1958. The cherry fly and the Mediterranean fruit fly. In Goidanich, G., Ed. Le avversita delle piante agrarie I(23). 8 pp. In Ital.
- Grierson, W. and Hayward, W. F. 1957. Fumigation keeps fresh citrus fruit moving. Fla. Expt. Sta. Res. Rpt. 2(1):6.
- Grunberg, A. 1956. A contribution to the control of the Mediterranean fruit fly. Cong. Internatl. de l'Agrumicult. Mediter. Livre 4:344-345. Pub. in 1958.
- Guennelon, G. and Féron, M. 1958. La receptivité des pêches aux attaques de Ceratitis capitata Wied dans la vallée du Rhône. France Inst. Natl. de la Rech. Agron. Ann. Ser. C, Ann. des Epiphyt. 9(3):355-370.
- Harper, R. W. 1956. The Mediterranean fruit fly. Calif. Citrog. 41(9):323, 337-340.
- Hennequin, J. 1957. Les résidus urbains et la mouche des fruits (Ceratitis capitata Wied) dans la region Parisienne. Phytoma 9(87):29-32.
- Jenkins, C. F. H. and Shedley, D. G. 1956. The Mediterranean fruit fly. West. Austral. Dept. Agr. J. 5(3):341-342, 345-346, 349-351.
- Jenkins, C. F. H. and Shedley, D. G. 1959. Insect pests and their control. The Mediterranean fruit fly. West. Austral. Dept. Agr. J. Ser. 3, 8(5):531-534, 537-542.

- Kerr, S. H. 1957. Station tests reveal facts about plant injury by pesticide sprays of importance in Medfly campaign. Fla. Expt. Sta. Res. Rpt. 2(1):4-5.
- Lupo, V. 1956. Present state of control of the fruit fly (Ceratitis capitata Wied.). Not. Sulle Mal. Delle Piante 37/38(16/17):149-167. In Ital.
- Mariconi, F. A. M. 1958. Pests of the coffee-tree. IV. Sao Paulo Supt. dos Serv. do Cafe Bul. 33(373):25-27. In Por.
- Martinez Andreu, A. 1956. La mosca del Mediterraneo. Rev. de Agr. 39(2):34-36.
- Martino, E. Di. 1956. The fruit fly (Ceratitis capitata Wied.) on citrus. Riv. Di Agrumicolt. 1(11/12):479-502. In Ital.
- McElwee, E. W. 1956. Research in the ornamental field in control of Mediterranean fruit fly. Fla. State Hort. Soc. Proc. 69:379-380.
- Melis, A. and Zocchi, R. 1958. The present state of the problem of Ceratitis capitata Wied. Riv. della Ortoflorofrutticoltura. Ital. 42(11/12):538-546. In Ital.
- Messenger, P. S. and Flitters, N. E. 1959. Effect of variable temperature environments on egg development of three species of fruit flies. Ent. Soc. Amer. Ann. 52(2):191-204.
- Michel, R., Tissot, M., Ferand, G., and Milaire, H. 1958. La mouche Méditerranéenne des fruits dans la région lyonnaise. Phytoma 10(95):33-38.
- Milaire, H. 1956. Note sur le développement et le caractere des attaques de la mouche Méditerranéenne des fruits (Ceratitis capitata Wied) dans la moyenne Vallée du Rhone. Acad. d'Agr. de France Compt. Rend. 42(10):504-508.
- Milaire, H. 1959. La mouche Méditerranéenne des fruits. Pomol. Franc. (n.s.) 7:9-13.
- Morse, R. A. and Robinson, F. A. 1957. Honey bees and the Mediterranean fruit fly spray program. Fla. Ent. 40(2):65-67.
- Oakley, R. G., Hidalgo, J., and Mabry, J. E., Jr. 1956. Report on personnel training and survey results for the Mediterranean fruit fly in Central America, Panama, and British Honduras for the period May 2 to July 12, 1956. U.S. Agr. Res. Serv., Plant Quar. Br. 14 pp.
- Oren, R. 1958. Control of the Mediterranean fruit fly in Israel. Span 1:17-20.
- Otte, W. 1956. Beobachtungen an der Mittelmeerfruchtfliege (Ceratitis capitata Wied.) im laboratorium. Anz. f. Schädlingsk. 29(9):142-145.
- Piltz, H. 1958. Die Mittelmeerfruchtfliege in Deutschland. Anz. f. Schädlingsk. 31(12):177-180. Engl. Sum.

- Planes Garcia, S. 1958. Estudios sobre la ecologia de la Ceratitis capitata en la zona naranjera del Levante español y nuevo procedimiento de lucha contra la misma. Cong. Internatl. de l'Agrumicult. Mediter. 4:346-364.
- Planes Garcia, S. 1959. Estado actual de los medios de lucha contra la mosca de los frutos, Ceratitis capitata, y mosca del olivo, Dacus oleae. Spain, Estac. de Fitopatol. Agr. Bul. de Pat. Veg. y Ent. Agr. 24:51-66.
- Plant Pest Control Branch and Entomology Research Branch. 1956. The Mediterranean fruit fly. Methods of eradication. U.S. Dept. Agr. PA-301. 8 pp.
- Popham, W. L. 1957. Medfly eradication. Amer. Fruit Grower West. Ed. 77(11):14.
- Puzzi, D. and Orlando, A. 1957. A new attracting substance to Ceratitis capitata (Wied.) for poisoned bait sprays. Biologico 23(9):181-184. In Por., Engl. Sum.
- Puzzi, D. and Orlando, A. 1957. Attempts to control "fruit flies" Ceratitis capitata (Wied.) and Anastrepha sp. by means of poison bait dusts. Biologico 23(2):21-25. In Por.
- Puzzi, D. and Orlando, A. 1957. Preliminary trials in control of the "Mediterranean fruit fly"--Ceratitis capitata (Wied.) -- by means of application of insecticides to the soil. Biologico 23(4):61-69. In Por.
- Puzzi, D. and Orlando, A. 1957. Screening tests of chemicals for liquid bait in traps as attractants to "Mediterranean fruit fly"--Ceratitis capitata (Wied.). Sao Paulo Inst. Biol. Arq. 24(10):137-148. In Por., Engl. Sum. Pub. 1958.
- Puzzi, D. and Orlando, A. 1957. Studies on some attracting substances employed as dry baits to the "Mediterranean fruit fly"--Ceratitis capitata (Wied.)--and using a new technique. Sao Paulo Inst. Biol. Arq. 24(11):151-161. In Por., Engl. Sum. Pub. 1958.
- Puzzi, D. and Orlando, A. 1958. Field experiments in the control of "fruit flies"--Ceratitis capitata (Wied.) and Anastrepha mombinpraeoptans Sein--realized in 1957. Biologico 24(1):9-12. In Por.
- Puzzi, D. and Orlando, A. 1958. Progress on fruit fly control in São Paulo, Brazil. FAO Plant Protect. Bul. 6(12):184-188.
- Puzzi, D., Orlando, A., and Ribas, W. C. 1957. The use of "fly-catcher" bottles in the control of "fruit flies." Biologico 23(10):189-196. In Por.
- Quintanilla, R. H. 1957. Emplazamiento de los mosqueros en funcion de la atraccion ejercida en la "mosca de los frutos" (Ceratitis capitata). Buenos Aires Univ. Facul. de Agron. y Vet. Rev. 14(1):71-75. Engl. Sum.

- Rivnay, E. 1956. Studies on the control of the fruit fly in Valencia orange groves in Israel. Israel Agr. Res. Sta. Ktavim 6:101-109.
- Robinson, F. A. and Kelsheimer, E. G. 1957. Beekeeping and Mediterranean fruit fly eradication. Amer. Bee J. 97(5):192-193.
- Rohwer, G. G. 1957. Eradication of the Mediterranean fruit fly. (Abs.), Ent. Soc. Amer. Bul. 3(3):38.
- Rohwer, G. G. 1957. Status of Medfly eradication program in Florida. Citrus Indus. 38(5):7-9.
- Rohwer, G. G. 1958. The Mediterranean fruit fly in Florida--past, present, and future. Fla. Ent. 41(1):23-25.
- Ruehle, G. D. 1956. Research on sub-tropical fruits as a result of Mediterranean fruit fly eradication program. Fla. State Hort. Soc. Proc. 69:287-289.
- Russo, G. 1959. Experiments in the biological control of the olive fly (*Dacus oleae*) and the fruit fly (*Ceratitis capitata*) in Italy. Portici Lab. di Ent. Agr. "Filippo Silvestri" Bol. 17:131-142. In Ital., Engl. Sum.
- Sacantanis, K. B. 1956/1957. La foret d'arganier. Le plus grand foyer de *Ceratitis capitata* Wied. connu au monde. Lab. di Ent. Agr. "Filippo Silvestri" Bol. 15:1-53.
- Salas F., L. A. 1958. Informe sobre el estudio de la mosca del Mediterráneo en Costa Rica. Costa Rica Univ. Pub. Ser. Agron. 1. 53 pp.
- Sándor, É. N. 1957. Protection against the introducing and dissemination of the Mediterranean fruit-fly. Agrartudomány 9(8):45-47. In Hung.
- Schmidt, E. 1956. Die Mittelmeerfruchtfliege: gast oder einwanderer? Gesunde Pflanzen 8(5):94-96.
- Schwitulla, H. 1958. Ein gerät zum fang von fruchtfliegen. Gesunde Pflanzen 10(4):78, 80.
- Shepherd, D. R. 1957. Eradication of Mediterranean fruit fly in Florida. FAO Plant Protect. Bul. 5(7):101-103.
- Smit, B. 1956. Control of fruit flies. Farming So. Africa 31(358): 29-30.
- Steiner, L. F., Mitchell, W. C., and Ohinata, K. 1958. Fruit fly control with poisoned-bait sprays in Hawaii. U.S. Agr. Res. Serv. ARS-33-3, rev. 5 pp.
- Templado, J. 1957. Sobre la prediccion de las plagas ocasionadas por la mosca de las frutas. Spain. Inst. De Biol. Apl. Pub. 25:139-145. Engl. Sum.

- Tominić, A. 1959. Fruit fly -- A new noxious member of our entomofauna. *Zastita Bilja* 55:3-14. In Serb., Engl. Sum.
- Toscani, H. A. 1958. Ensayos de control de "Ceratitis capitata" (mosca del Mediterráneo) en el Delta del Paraná. *IDIA* 123: 123:29-32.
- Touzeau, J. 1958. La lutte contre deux parasites tres dangereux pour l'arboriculture tunisienne: la mouche des fruits et l'hylesine de l'olivier. *Vignobles Jard. et Vergers de Tunisie* 12:21-27.
- U.S. Agricultural Research Service. 1956. Some questions and answers about Mediterranean fruit fly. U.S. Dept. Agr., Agr. Res. Serv. 5 pp.
- U.S. Agricultural Research Service, Plant Pest Control Branch. 1956. Manual of approved treatment procedures to be used under the Mediterranean fruit fly quarantine. U.S. Agr. Res. Serv., Plant Pest Cont. Br. 14 pp.
- van de Pol, P. H. 1957. The Mediterranean fruit fly. Netherlands Dir. Van De Tuinbouw Meded. 20(1):36-38. In Du., Engl. Sum. Increase in various European countries.
- Viel, G. and Catelot-Goldman, C. 1957. Efficacite sur Ceratitis capitata Wied des fumigations des peches au dibromethane. Phytiatrie-Phytopharm. 6(1):15-17.
- Viel, G. and Chancogne, M. 1957. Toxicite d'ingestion de quelques insecticides pour Ceratitis capitata Wied. Phytiatrie-Phytopharm. 6(4):217-221.
- Wille, J. E. 1956. La mosca Mediterránea de la fruta. *Vida Agr.* 33(390):345, 347-348.
- Wille, J. E. 1958. La mosca Mediterránea Ceratitis capitata Wied, en el Perú. *Rev. Peruana de Ent. Agr.* 1(1):59-60.
- Wolfenbarger, D. O. 1957. EDB properly used against Medfly does not injure nursery and greenhouse plants. *Fla. Agr. Expt. Sta. Res. Rpt.* 2(1):3.
- Wolfenbarger, D. O. 1957. Notes and comments on the second Mediterranean fruit fly infestation. *Fla. Ent.* 40(1):29-31.
- Wolfenbarger, D. O. 1957. Test work on some sub-tropical fruits and ornamental plants in connection with the Mediterranean fruit fly. *Fla. State Hort. Soc. Proc.* 70:275-277.

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